

PHYSICS

Fast Nuclear Reactor, Clementine, Dismantled

► CLEMENTINE, THE Los Alamos Scientific Laboratory's fast reactor, is now being dismantled after having been in almost continuous use since it first "went critical" in the fall of 1947.

It was the only known reactor of its kind, being fueled with plutonium and cooled by mercury, and its reaction was maintained by "fast" neutrons rather than by neutrons slowed to "intermediate" or "thermal" energies. It was one of two research reactors used by the Laboratory.

The second, known as the Los Alamos enriched homogeneous reactor, or more popularly as the "water boiler," is still in operation and will continue to be for an indefinite period.

Since there is little accurate information available at present as to what happens to the components of a reactor over a period of years, it is expected that Clementine's dismantling, and the subsequent study of its parts, will add valuable knowledge to the science of reactor development and operation.

Because the Laboratory no longer has a need for this type of reactor, Clementine will not be reassembled, but will be replaced by a different type of research reactor more suited to the Laboratory's present requirements.

Science News Letter, May 23, 1953

BIOCHEMISTRY

Salt Shows Two Stages Of High Blood Pressure

► THE WAY the body handles salt may give doctors in the future a "relatively simple way" to distinguish two stages of high blood pressure and to plan for more effective treatment.

This possibility, based on studies with laboratory animals and observations of patients, was reported by Dr. D. M. Green of the University of Southern California, Los Angeles, at the meeting of the American Heart Association's Council for High Blood Pressure Research in Cleveland.

"It may also become possible," Dr. Green said, "to predict in which patients the risk of certain extensive surgical procedures is justified because of the poor chances of cure by any less extreme measure."

In his report, Dr. Green described the two groups into which he classified human beings suffering from the most common type of high blood pressure, known as essential hypertension. Patients in the first group, representing an earlier stage of high blood pressure, showed increased appetites for salt, and eliminated salt and water at greatly increased rates.

The second group of patients, representing a later phase of high blood pressure, had normal salt appetites and their rates of salt elimination were within or below the

range found in patients with normal blood pressure.

Dr. Green observed that in his earlier studies with animals, when injections of adrenal gland hormones were stopped or a completely salt-free diet was fed to those in the earlier stage, the blood pressure fell to normal and the symptoms disappeared. He also noted that these measures had no effect in the late stage of the disease. The blood pressure at that stage could only be reduced by removing the entire pituitary gland or the greater part of both kidneys.

Science News Letter, May 23, 1953

CYTOLOGY

New TB Diagnosis Takes Days, Not Weeks

► THE TIME needed to diagnose tuberculosis can be cut to days instead of weeks by a method announced by Drs. John Bud-dingh and J. W. Brueck of Louisiana State University School of Medicine at the meeting of the Louisiana State Medical Society in New Orleans.

The method is to inject the yolk sac of a chick embryo with material from a patient thought to have tuberculosis. The embryo is then incubated for four days. The TB germs, or bacilli, if present in the inoculated embryo, can then be easily seen under a microscope.

Standard methods now used involve injection of a laboratory animal, usually a guinea pig, with material from the patient with positive results usually evident in three to six weeks, and use of a culture medium which takes two to six weeks or longer because the bacilli grow slowly.

The new method will also, the doctor said, help doctors learn more quickly the results of a new treatment of patients. It may also be useful in testing newly developed drugs for their effects on TB germs and might be adapted to test drug resistance of the germs.

Science News Letter, May 23, 1953

INVENTION

New Machine Forms Ice Cream for Cones

► A MACHINE for forming balls of ice cream for cones will be a welcome summer addition to the records of man's ingenuity as listed in the U.S. Patent Office. The device received patent number 2,638,065.

The machine has a cup into which ice cream is forced. The cup is then turned upside down and knives, cutting around the interior surface of the cup, release it. The ball then drops into the cone.

The present invention deals particularly with an improvement in the operation of the knives which remove the ball of ice cream from the inverted cup. Robert G. Tarr, Villa Park, Ill., is the inventor, and he assigned one-half his rights to Jack C. Webb, Chicago, and the other half to Taft Moody, Memphis, Tenn.

Science News Letter, May 23, 1953

IN SCIENCE

GEOPHYSICS

Warmth of Earth's Heart Explains Magnetic Field

► HOW WARM the heart of the earth is, a problem that can throw some light on her magnetism, has been measured by a new method.

Dr. J. A. Jacobs of the University of Toronto, Canada, has found that, by assuming that as pressure inside the earth increases the volume expansion due to the heat developed becomes less, his measurements agree with others made by independent methods. They contradict the recent theory of Dr. E. C. Bullard, published in the *Proceedings of the Royal Society*, that a liquid-like core spinning inside the earth like a dynamo could explain earth's magnetic field.

The amount of heat and what becomes of it are the questions that will decide between the two theories, in Dr. Jacobs' opinion. He finds that too much heat is demanded by Dr. Bullard's theory, even if the core were all made of radioactive iron, while his own theory gives results more consistent with observed temperature measurements.

The new temperature-pressure law is described in *Nature* (May 9.)

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AVIATION MEDICINE

Too Fast Tumbling in Plane Escape Dangerous

► CREWMEN ESCAPING from a plane should not have to tumble at a rate faster than 90 revolutions per minute for three seconds or 50 rpm for two minutes, it appears from studies reported at the meeting of the Aero Medical Association in Los Angeles.

These figures apply with the center of rotation about the hips. Figured for the center of rotation about the heart, 25 to 30 revolutions per minute higher are safe.

At these rates, pain in the head region and tiny hemorrhages occur on the lining of the eyelids and covering of the eyeball, showing that blood circulation is being affected. The impairment of circulation at these speeds, however, was not serious.

Rates of tumbling between 180 and 240 rpm following seat ejection and free fall have been reported. Such rates may be a source of danger to the escaping crewman, Capt. Harold S. Weiss, Capt. Robert E. Edelberg, Lt. Paul V. Charland and Dr. J. I. Rosenbaum of the Aero Medical Laboratory, Wright-Patterson Air Force Base, Ohio, reported.

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CE FIELDS

TECHNOLOGY

Paint Often Not Needed On Industrial Articles

► FROM A money-saving angle, industries sometimes are more justified to let a piece of equipment rust away through its useful life than to keep it shiny and trim under blankets of paint.

Clarence C. Harvey, Ethyl Corp., Baton Rouge, La., told the American Petroleum Institute meeting in New York that many metal articles can rust away without sacrificing utility.

But where paint is needed, it usually costs less to keep the paint in good repair than to allow it to fail, bringing on complications in the part being protected, he said.

Mr. Harvey also said he thought industry was putting too much emphasis on "painting to protect," and not paying enough attention to the decorative function of paint in industry.

Science News Letter, May 23, 1953

MEDICINE

Blackouts Major Cause Of Traffic Accidents

► IF THE "desire to speed, to show off, inattention and carelessness" are eliminated, a large percentage of persons who have accidents on the highways and in the air are those who have sudden weak spells, dizziness, fainting or, as they call it, a "blackout," Dr. Edgar E. Poos of Detroit declared at the Aero Medical Association meeting in Los Angeles.

Doctors, he said, are seeing more and more patients with these complaints, any of which in a pilot or motorist may cause a fatal accident.

"The aging of the population, stresses and strains of daily living, the anxieties, fears and tensions in the atomic and jet age" are probable causes of the greater frequency of these complaints.

In many cases there is a large emotional element. The patients "have a tendency to an emotional immaturity and find it hard to meet the realities of life," Dr. Poos said.

"Great fright, terrifying sights, bad news, apprehension and various other emotions may bring on these attacks. Some of the other common conditions are sight of blood, standing a long time, especially in hot weather, removing blood from the arm, vaccinations, shots in the arm while standing, severe pain, burns, acute or chronic infections, following prolonged bed rest, fevers, anemias, malnutrition and dehydration. These are often associated with fainting on assuming the upright position due to blood leaving the brain suddenly."

People who wear tight collars may black out or faint when they turn their heads while trying to park their cars because they have a sensitive carotid sinus.

Some people have normal blood pressure when lying down which drops when they stand up. They may have these faint spells.

Various heart conditions and either under or over ventilation may cause the symptoms. The cases, Dr. Poos advised, should be thoroughly studied to find the cause.

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PSYCHIATRY

Wives May Drive Husbands to Drink

► IT MAY be true that certain kinds of wives can drive their husbands to drink.

In trying to help the wives of alcoholics meet their problems, one psychoanalyst has discerned certain patterns in them. However, the psychoanalyst, Dr. Samuel Futterman of the University of Southern California, warns against over-simplification of the problem.

He said he began to see in the wives of alcoholics some basic insecurity which they had hoped would be taken care of by their marriages. The husbands, however, were also insecure and dependent, and therefore the wives developed feelings of resentment, aggressiveness and of being unloved. They put more and more demands on their husbands and thus the husbands became less and less adequate. Drinking was proof of this inadequacy.

Over-ambitiousness for social position or for the children seemed to be another pattern. This would put excessive burdens on the husband and would make him feel inadequate to his children, Dr. Futterman said.

Sometimes, if the husband's alcoholism is cured, the analyst said, then the wife's neurotic symptoms, fears and inadequacies would break out into the open.

Science News Letter, May 23, 1953

INVENTION

Patent Squirtless Grapefruit Knife

► A GRAPEFRUIT knife that promises to produce no squirting and which requires no effort on the part of the cutter or eater has been invented. It also leaves no mess, the inventor claims.

The knife has double blades that cut away the sides of two adjacent grapefruit segments on each side of a single web. At right angles to these two blades are two other blades which, simultaneously, cut the backs of the segments away from the rind of the grapefruit.

The inventor is Dean S. Conklin, North Hollywood, Calif. He assigned his patent, number 2,637,899 to Conklin Products Corp., Los Angeles.

Science News Letter, May 23, 1953

INVENTION

Trap Prevents Leaving Lot Without Paying Fee

► A TRAP prevents automobiles from leaving parking lots before paying their fees, but does not prevent cars from driving freely into the lot. It consists of a wedge in the driveway, with its point facing out of the parking lot and its base facing inward.

In trying to drive out, one front wheel hits the base of the wedge. When money is deposited in a slot, the wedge drops to the surface of the roadway. A car coming in depresses the wedge to the surface merely by driving over its point.

Inventor was the late Glen S. Stratton, New York. Robert M. Stratton, Cook County, Ill., the administrator, received patent number 2,637,920, which he assigned to Richard H. Hallsted, New Canaan, Conn., trustee.

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ICHTHYOLOGY

Here Is Tale of Tailless Goldfish

► THE CASE of the tailless goldfish began when some unknown creature—a turtle?—snipped off the entire tail of a goldfish in the outdoor aquarium of Dr. C. M. Breder, Jr.

When Dr. Breder, ichthyologist of the American Museum of Natural History, discovered the de-tailed fish, he tried to catch it. But the fish "wagged the stump with sufficient vigor to elude easy capture," he reports.

Five days later, the dead tissue about the wound was gone, and the flesh was smooth and pinkish. The fish's companions avoided this tailless thing whose over-weighted bow kept him pointed toward the bottom except when he paddled vigorously.

In another week, the fish's dorsal and anal fins were drawn backwards, probably by muscular contraction, giving the fish a rather effective substitute for a tail fin. Fifty-three days later, the tailless fish seemed completely adjusted; it swam with its companions, fed and grew at a normal rate. It did, however, spend considerable time "standing on its nose."

Anticlimactically, when fall approached, Dr. Breder placed the goldfish in an indoor aquarium; four days later, the tailless fish was dead.

An autopsy showed that 10 of the goldfish's tail vertebrae had been severed by the bite. The posterior chamber of the swim bladder had been suppressed in size, possibly a compensation for the disproportionate weight of the fish's anterior end. The fish's ovaries were well developed and filled with ripe roe.

Accounts of survival of fish that have lost their tails are fairly numerous in scientific literature. Dr. Breder listed 11 similar cases.

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